

Ian Shanahan (1987/1994)

– *To Ian Fredericks*

For Stephen Morey to play:

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*Arcturus Timespace*

for

soloist (amplified mandolin, percussion) and fixed media,

with

*optional* light- and image-projection

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## PROGRAMME ANNOTATION

### *Arcturus Timespace*

for soloist (amplified mandolin, percussion) and fixed media,  
with optional light- and image-projection

Ian Shanahan (1987/1994)

*Le silence éternel des espaces infinis m'effraie.*

– Blaise Pascal.

Pascal's wonderful aphorism – “The eternal silence of infinite space terrifies me” – evokes certain images which **Arcturus Timespace** attempts to capture. Truly, I have been spellbound by astronomy, cosmology, and the Cosmos itself since I was a child – and even now, I am constantly awed when I look up at the clear night sky with all of its breathtaking beauty, brilliance and grandeur, savouring the realization that I am peering through both ‘infinite’ space *and* time. Is it therefore not surprising that (as a composer and as a human being) I am really not concerned with the deification of music history and the attendant compositional supplication before musical idols of the past, with petty nationalisms and benighted tribal mentalities, with grubby politics and all that is mundane ... but more with the mystical and the sacramental, spirituality, new technologies, and – in particular – with the limitless extension of sonic and artistic possibilities? I am a musician who looks primarily to the future, and the future of Mankind is *out there*.

So, on a technical level, the structure of **Arcturus Timespace** is basically cyclical. After an extended introduction by the soloist, the pre-recorded electroacoustic part repeats itself in a strict manner after approximately two minutes. Superimposed upon this, however, the soloist's part is ‘through-composed’, with hints of recursion over a shorter periodicity – so that the apparent ‘orbits’, of the human performer's music playing against its electroacoustic accompaniment, do not coincide. A mosaic formal design, a clockwork-like mechanism reminiscent of the workings of the Cosmos itself, thus unfolds; it extends upon that of an earlier work, **Echoes/Fantasies** (1984), to which some of the musical material of **Arcturus Timespace** is related. (Moreover, such abstract concepts stem, to some degree, from my involvement with chess problems: the art of chess composition is capable of insinuating all sorts of unique musical forms, structures and ideas!) The closing section of **Arcturus Timespace** also invokes this same metaphorical ‘orrery process’ from Celestial Mechanics, only compressed into a somewhat more compact time-frame.

The stereophonic fixed-media part of **Arcturus Timespace** was realized at the Sydney University Experimental Sound Studio [SUESS], directed by Ian Fredericks; being computer-generated, it utilizes the Frequency Modulation Algorithmic Sound

Synthesis techniques of two Yamaha CX5M music computers. The *mélange* of computer timbres are mostly bell-like, possessing a glassy, metallic, or ceramic sheen (modelled to some extent upon the acoustical signatures of the percussion instruments themselves). Although I do confess that this timbral world is in danger of becoming an ‘FM cliché’ ... I just love bell sounds!

In composing **Arcturus Timespace**, my intention *ab initio* was to have the electroacoustic part intermingle with, yet also extend, the sounds of the mandolin and percussion. (I also state, for the musicological record, that any perceived association between my soundscape in this piece and the musics of Asia is entirely coincidental!)

The percussion instruments employed in **Arcturus Timespace**, all played by the soloist, form a kind of ‘sonic bridge’ between the mandolin and the electroacoustic part. They include: various types of glass fruit-bowl or ceramic flowerpot-like objects (eight “clay bells”); a collection of six Korean stainless-steel mixing bowls; shell-disc, ceramic-disc, and brass-tube windchimes; and a large tam-tam.

The image projections that optionally accompany the music of **Arcturus Timespace** consist of diverse stars, star systems, nebulae, galaxies, luminous gas-clouds and -sheets... It is perhaps also worth mentioning that the amplified mandolin's output, as well as that of the electroacoustic fixed-media part, are both spatially controlled through a mixing desk during live performance.

**Arcturus Timespace** is gratefully dedicated to Ian Fredericks and Stephen Morey.

© Ian Shanahan, Sydney, Australia; 14 April 1987.

*Arcturus Timespace*, commissioned by Stephen Morey and the ensemble ELISION, was premièred by Stephen Morey (amplified mandolin and percussion) and Ian Shanahan (sound diffusion), during an ELISION concert – “Madness in Paradise – The Return” – held at the Sandy Beach Community Centre, cnr. Beach Road & Sims Street, Sandringham, Melbourne, on 26 April 1987.

A recording of **Arcturus Timespace**, played by Stephen Morey, is now commercially available on the Compact Disc “Solar Dust” (Broad Music Records Jade JADCD 1080).



# PERFORMANCE NOTES

## PREAMBLE

I wish to thank *Stephen Morey* for his research assistance, for his kindness in demystifying the subtleties of the mandolin for me, and for his patient editorial guidance later on in the compositional process of **Arcturus Timespace**. Moreover, this piece could never have sprung into existence without the constantly warm, avuncular guidance of the late *Ian Fredericks*, who (at the very last minute) even helped me to carry out the final mix-down of **Arcturus Timespace**'s electroacoustic fixed-media part. I am also greatly indebted to my dear friend *Steve Clark* for his expert desktop-publishing of my score using FINALE 2000. I thank all of these gentlemen for their affable generosity.

## 1. GENERAL REMARKS

### INSTRUMENTATIONAL REQUIREMENTS

#### • *Amplified Mandolin and Percussion* (1 player)

- 1 mandolin (preferably flat-backed)
- 2 tuning forks: A440 Hz and A415 Hz
- 8 clay (or glass) 'bells'
- 6 Korean stainless-steel mixing-bowls
- 1 large tam-tam {suspended in a frame}
- 3 windchimes
  - 1 brass-tube windchime
  - 1 shell-disc windchime
  - 1 ceramic-disc windchime

Note: technical specifications with detailed descriptions of these instruments shall be given later; I have also appended to these Performance Notes a comprehensive diagram and a photograph depicting their *physical layout and appearance*.

#### • *The Electroacoustic Fixed-Media Part*


My stereophonic fixed-media part to **Arcturus Timespace** was composed – from December 1986 to March 1987 – at the Sydney University Experimental Sound Studio [SUESS], then directed by Dr Ian Fredericks. Being computer-generated, it utilizes the Frequency Modulation Algorithmic Sound Synthesis techniques of two Yamaha CX5M music computers. A CD copy (or the \*.wav file) of this fixed-media part is available from the Australian Music Centre [AMC] {website: <<http://www.amcoz.com.au>>} or directly from the composer {postal address: 57 Yates Avenue, Dundas Valley NSW 2117, AUSTRALIA}; it can also be purchased together with the score from the AMC. Note that in live performance (due to a 'bug' in the computer programming?) the tempi may be slightly faster than notated.


## AMPLIFICATION OF THE MANDOLIN AND PERCUSSION INSTRUMENTS

It is necessary to amplify the mandolin, preferably with a high-quality omnidirectional condenser microphone placed fairly close to the instrument. Likewise, several microphones will undoubtedly be needed to reinforce the delicate sounds emanating from the 'bells' and mixing-bowls in particular.

## GRACE-NOTE GROUPS


*Grace-notes* occupy (very) short indeterminate duration – which I leave to the discretion of the soloist. In general, they should be played somewhat rapidly (but not necessarily evenly) – at a speed to an extent dependent upon local context and other instructions or technical exigencies – up to 'as fast as possible'. Nuances of grace-note speed have also been denoted by the number of *beams* (one, two, or three) that span the grace-note group, by accompanying verbal directives, and even by *tenuti*. Furthermore, grace-notes ought not to be thought of as mere 'ornaments', of secondary architectonic status, to the 'main notes': *all* sonorities in **Arcturus Timespace** are equally important!

 – an *accelerando* within the grace-note grouping.

 – a *rallentando* within the grace-note grouping.

## PAUSES

Unless otherwise indicated, precise durational details of pauses are left to the interpretation of the soloist. The following non-traditional symbology is employed:

 is a *squared fermata*, denoting a *relatively lengthy pause* (increasing a duration by at least a factor of 2.5). Whenever this symbol appears within the stave the duration of the pause is always specified above the stave (in seconds).

## TIME-SPACE NOTATION (BARS 116–134)

For these bars, the space between each 'ictus' (short, thick vertical stroke) corresponds to one ♪ at metronome 40 = 1.5 seconds. Within this temporal grid, play any musical events between such ictuses *approximately* in direct chronometric proportion to their relative horizontal placement upon the score-page. Any sense of metricated rigidity is strongly discouraged! (Temporal *asymmetry* ought to be strived for.) Sustained or connected durations herein are notated with extended beams.

## DYNAMIC INDICATIONS

Apart from the usual dynamic indications (*ppp*, *pp*, *p*, *mp*, *mf*, *f*, *ff*, *fff*), the following symbols are employed in **Arcturus Timespace**:

*p poss.* and *f poss.* are abbreviations for ‘as soft as possible (but still audible)’ and ‘as loud as possible’, respectively;

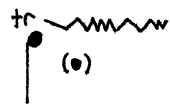
Dynamic indications apply until they are modified by the next dynamic instruction. Moreover, a proper balance of dynamics between instruments ought to be maintained throughout **Arcturus Timespace**: for example, the perceived loudness of an *mf* sonority in one part should match that within other parts. (Since amplification levels are controlled ultimately by the sound-projectionist, however, dynamic indications can never be absolute but simply represent what the soloist attempts.

## ARTICULATION, RESONANCE, AND PITCH DESIGNATION

All articulations – *legato*, *tenuto*, *mezzo-staccato*, *staccato*, *staccatissimo*, *accent* (>), *sforzando* (^) etc. – should be duly observed. A *sforzando* attack will always be based upon the prevailing dynamic level, so that (for example) *sffz* = *sforzando* in *ff*. Moreover, *all* instrumental sounds must be allowed to resonate *for as long as possible* – often to extinction. But whenever the soloist moves from their mandolin to the percussion instruments, the mandolin sound’s resonance-time is notated explicitly.

In any textual references to pitch herein “Middle C” shall be designated as C<sub>4</sub>3, the C<sub>4</sub> one octave higher as C<sub>4</sub>4, etc. (i.e. assuming that A<sub>4</sub>3 = 440 Hz, then C<sub>4</sub>3 ≈ 261.6255653 Hz). Small degrees of intonational deviation – slight microtonal inflections, of up to about a fifteenth – upwards and downwards are indicated by upward-pointing and downward-pointing arrowheads, respectively, upon accidental symbols.

## TRILLS



denotes a *trill*. The pitch of the secondary note(s) is indicated by a small notehead in parentheses; note that the interval between trill-pitches may be greater than a major 2nd, so that the expression ‘trill’ herein refers to an oscillatory trilling-action over *any* interval! The evolution in velocity of a trill’s motion is denoted by changes in the moment-to-moment frequency of the triangular waveform contour.

## CUEING THE PROJECTIONISTS (BARS 12 & 132)

All personnel must agree upon cueing signals before bringing **Arcturus Timespace** to a public performance: such signals from the soloist should be quite

subtle (certainly not so blatant as to inform the audience!) – merely a glance, or some other unobvious ritualistic gesture.

## 2. THE MANDOLIN: DETAILS

### CHARACTERISTICS OF THE MANDOLIN, AND STAGE SET-UP

**Arcturus Timespace** assumes a normal mandolin (of flat-back design, preferably)<sup>†</sup> possessing at least 19 frets. For maximum visual impact during live performance, the soloist’s music stand(s) should be set *as low as possible* and, if necessary, encompass a small, unobtrusive yet reliable *light* (such as a ‘book light’ – purchasable from large department stores) to illuminate their sheet music. Furthermore, it may well prove necessary to suspend the mandolin from the soloist’s neck using a strap, sling, or even an efficacious length of string!

† Since the soloist kneels on the ground (upon a cushion or pillow) surrounded by percussion instruments throughout their performance of **Arcturus Timespace**, a flat-back – as opposed to a Neapolitan – mandolin is definitely preferred here, because from bar 113 onwards this instrument, too, must be deposited upon the floor: a round-back Neapolitan mandolin in such a deployment would tend to be rather unstable, and so may need some kind of cradle apparatus to prevent it from rocking back and forth.

### OPTIONAL ‘WORKING OF THE MICROPHONE’

- A** denotes some (optional) movement of the mandolin *away* from the microphone.
- M** denotes some (optional) movement of the mandolin *closer* to the microphone.
- M** - - - - **A** denotes a continuous (optional) *change of distance* between the mandolin and the microphone, as indicated. The dotted line defines the moment in time when such a transition begins; precise details of execution are otherwise left to the discretion of the soloist.

### TUNING OF THE OPEN STRINGS, AND THE SPECIFICATION OF COURSES

One string on each course of the mandolin is to be very slightly lowered in pitch, thereby producing a richer basic timbre: a ‘chorus effect’. The resultant beat-frequencies should be no greater than 4 – 5 Hz (beats-per-second) on the open strings, with different beat-frequencies being generated upon each (open) course; precise details are left to the discretion of the soloist. The course to be played upon at any given moment is indicated in the usual manner: G, D, A, E (each letter being ringed within the score). When such a symbol is omitted, either the musical context

renders the choice of course obvious, or a whole sequence of notes is to be played upon the same course as specified at the beginning of the sequence.








## ACCIDENTALS

Any accidental within the score of **Arcturus Timespace** applies only to that note which it immediately precedes.

## ARTICULATION AND RESONANCE

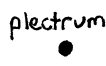

All strings on the mandolin must be permitted to ring on *as much as possible*. Noteheads marked with a small tie 'to nothing' (i.e. a 'lasciare vibrare') are to be left to resonate beyond their given durations.

The following symbology applies especially to articulation:

-  – *tenuto* (hold the note for the full duration as given, or even a little longer) and *staccatissimo* (very short, *molto staccato*), respectively. These symbols do *not* imply the application of any additional accent or stress, unless otherwise indicated.
-  – pluck only the first note and *hammer* or *pull-off* the subsequent notes with the left-hand fingers, according to the melodic contour.
-  – *legato*: pluck only the first note, but for the subsequent notes, merely *place* or *lift* left-hand fingers on or off the fingerboard, according to the melodic contour.
-  – *snap pizzicato*: lift the strings with the thumb, or thumb and forefinger, and allow them to snap back percussively against the mandolin's fingerboard.
-  – pluck only *one string within the course*. (This directive applies to single notes only.) Unless this symbol is given, the number of strings per course that are to be plucked is left to the discretion of the soloist.
-  – *arpeggiate* the notes in a somewhat leisurely manner.
-  – *strum* (i.e. *rapidly arpeggiate*) the notes of the chord.


For both forms of *arpeggiation*, their speed of execution is left to the interpretation of the soloist. *Arrowheads* upon the above symbols indicate the *direction* of the arpeggio's action: ↑ = play the *lowest-pitched* course first; ↓ = play the *highest-pitched* course first.

## PLUCKING MATERIAL

-  *plectrum* – pluck the string(s) with a *plectrum*. The point or the side (i.e. rounded edge) of the plectrum may be used at the discretion of the soloist.
-  *finger* – pluck the string(s) with the *right-hand index finger or (thumb)*. The *pad* or the *tip* of the finger may be used at the discretion of the soloist.

Note: The specified plucking material is to be employed until the other is called for. Moreover, from bar 116 onwards, the mandolin's open strings are also occasionally strummed with the very end of a vibraphone mallet's rattan/cane handle!





## TREMOLO

-  – a *tremolo* (successive up- and down-strokes) is to be executed very quickly or as quickly as possible (tastefully, according to the musical context).

When playing tremoli with a plectrum, the *side* (i.e. rounded edge) of the plectrum may be used in soft dynamic levels to impart a more gentle, slightly fuzzier quality than is usually obtained by using the plectrum's point. Furthermore, in tremolo, a *diminuendo to very low dynamic levels* may be achieved by gradually rotating the flat face of the plectrum through 90° relative to the length of the string. When playing soft tremoli with the finger, the *fingertip* may be utilized instead of the pad in order to achieve a different subdued quality. All of these techniques may be used at the discretion of the soloist.

## PLUCKING POSITION


The following symbols are mostly affixed to the relevant note's *stem* – except in the case of plucking-position *transitions* in tremolo, when they are drawn *beyond the notehead*:

-  – *molto sul ponticello*: pluck the string(s) *very close* to the bridge indeed.
-  – *sul ponticello*: pluck the string(s) close to the bridge.
-  – the normal plucking position (abbreviation: *pos. ord.*) is notated in the usual fashion.
-  – *sul tasto*: pluck the string(s) 'up the neck' somewhat (on or towards the fingerboard), nearer to the middle of the vibrating string-length than usual.

♢ – *molto sul tasto*: pluck *precisely* at the middle of the vibrating length of the string(s) – directly above the twelfth fret for the open string(s), or directly above the fret which is twelve frets higher than that fret where the finger stops the string: this plucking position may actually be beyond the end of the fingerboard. Plucking the string(s) *molto sul tasto* will yield a timbre that is very mellow, rich in odd-numbered harmonics.

○ ----△ – *in tremolo only*, a smooth transition of plucking position (as indicated). The dotted line defines the moment in time when the transition begins; precise details of execution are otherwise left to the discretion of the soloist.

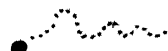
### ACTIVATING THE STRINGS BEHIND THE BRIDGE

 – activate the strings *behind the bridge*. All eight strings must be activated, and they should be permitted to ring on, unimpeded. In bar 134, the direction and speed of arpeggiation is indicated in conjunction with this symbol.

The two *tuning forks* listed earlier (one at A440 Hz and the other at A415 Hz [≈ G#3 relative to A440]) are required in bars 111–112: the eight strings behind the bridge of the mandolin are to be struck *as forcibly as possible* with the tuning forks' tines, after which their butts are immediately to be placed upon the bridge itself – to yield a gentle and sustained semitonal 'hum'.

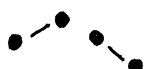
### PITCH-BENDING AND VIBRATO TECHNIQUES

Just one type of *pitch-bend* and *vibrato* is employed throughout **Arcturus Timespace**. Vibrato is generated simply through the repeated application of a pitch-bend technique.

 – *kōtō* vibrato/pitch-bend: according to the given contour, depress and release the string(s) *behind the bridge* with the right-hand index finger (and/or other right-hand fingers), causing the pitch to fluctuate above the written note.


The waveform contours provide only an *approximate* indication of the frequency and amplitude of the required actions. The maximum amplitude of the given contour should correspond directly to the maximum pitch-bend physically attainable in the musical context.

### PORTAMENTO

 – *portamento*: slide the left-hand finger(s) along the fingerboard from one position to another, thereby allowing the pitch to


(smoothly) rise or fall, as indicated. The *speed* of the sliding action is carried out according to the notated duration. *Articulation* – 'legato': *do not* pluck the terminal note of the portamento; or 'tenuto': conduct the sliding action and then pluck the terminal note of the portamento – is always indicated in conjunction with these symbols.

### NATURAL HARMONICS

 – on the specified open string(s), lightly touch the *node* (with a left-hand finger) at or near the fret corresponding to the pitch notated with a broken-diamond notehead, while plucking ... in order to produce the harmonic sound. Harmonics must always be allowed to ring on.

Specific *plucking positions* for harmonics are rarely requested herein, so as to encourage the soloist themselves to locate a plucking position that furnishes the *cleanest, most sonorous timbral quality* for each harmonic. (Occasionally, however, technical and physical constraints may restrict the ambit of choice for a harmonic's plucking position.) Note: Resultant pitches of harmonics are nowhere displayed within the score itself.

### BITONES

 – on the specified course, stop the strings normally at the fret corresponding to the pitch notated with an oblong notehead, and pluck the strings between the stopping finger and the *nut*! (It is generally easier and more successful to pluck the strings somewhat away from the stopping finger.)

The following bitone – shown with its projected resultant pitch (which is not given within the score itself) – has been utilized in **Arcturus Timespace**, bars 38–39:

Course	Fingered pitch	Resultant bitone pitch
A $\sharp$ 3	G $\flat$ 4	C $\sharp$ 5

Note: Because mandolins' actions can vary from one instrument to another, the resultant bitone pitch in practice might not correspond exactly to that predicted within the table above. Regardless of inaccuracies, however large (or small) any bitone pitch-discrepancy might be, the soloist whenever performing this bitone is *on no account ever* to attempt to 'correct' such deviation – should it occur – by selecting some other course or fret to stop: only that course and conjunct fingered pitch specified above may be engaged for the production of this bitone in **Arcturus Timespace**.


### 3. THE PERCUSSION INSTRUMENTS: DETAILS

#### INTRODUCTION

**Arcturus Timespace** calls for some unusual and exotic percussion instruments. Therefore, so as not to make this piece's realization prohibitively difficult, certain substitutions are permissible. It is, however, crucial that the tunings of the percussion instruments described below be preserved *at all costs*: these particular intonations were very much in my 'mind's ear' throughout the composition of **Arcturus Timespace**. So it is obligatory that instruments which conform as closely as possible to these tunings be procured! Note that certain percussion instruments whose pitches *almost* match those designated may in fact be inflected accordingly: for example, some mixing-bowl pitches could be flattened by pouring a certain amount of water into them (although the water's inertia might entail an undesirable loss of resonance).

#### RESONANCE AND ARTICULATION

Please permit all percussion sonorities to *resonate beyond their specified durations*: such sounds should actually be allowed to ring on until they have completely dissipated. Furthermore, when playing percussion 'chords' – simultaneous attacks upon two percussion instruments – it is *not* crucial that the attacks must coincide with absolute precision: indeed, slight differences in attack-onset (to yield a very rapid arpeggio) might even be musically desirable!


 denotes a *sweeping motion* of a mallet across the sides of two adjacent 'bells' (bar 13).


#### TRILLS ON THE 'BELLS'


All trills between a pair of clay (or glass) 'bells' are to be executed with just one hand, by rattling a single mallet between two horizontally adjacent instruments.

#### MALLETS

The following pictographs illustrate the different types of percussion mallet called for in **Arcturus Timespace**. Drawn together *within rectangular boxes*, such pictographs show the number and type of mallets required throughout each section of the music; no more than one mallet per hand is ever needed. A *non-boxed mallet pictograph* refers just to a specific instrument and single event or note.

 denotes a *yarn-wound vibraphone mallet of medium hardness*.

 Invert the vibraphone mallet and play the designated instrument(s) with the very end of the vibraphone mallet's rattan/cane handle (bars 96, and 116 onwards)!

 denotes a *large, (very) soft tam-tam beater*. This tam-tam beater should be carefully suspended from the tam-tam's frame in such a way that the beater's interference with (damping of) the tam-tam's resonance, after the tam-tam has been struck, is non-existent or negligible.

#### PERCUSSION INSTRUMENTS: COMPREHENSIVE DESCRIPTIONS, AND ABBREVIATIONS

Within the percussion staves, the percussion instruments have been notated in sequential order according to their physical distribution; they are listed below in the same fashion.

##### 8 Clay (or Glass) 'Bells': Clays \*

*These gently percussive sound-sources may be fictile or ceramic flowerpot-like objects, vitreous fruit-bowls, basins, or other glass vessels (and so forth). Their intonations and other acoustical characteristics are:*

Instrument	Main Pitch(es)	Other Partial(s)	Modulation
1	G $\sharp$ 5	C $\flat$ 7	fast vibrato
2	F $\sharp$ 5	A $\sharp$ 6	medium vibrato
3	D $\flat$ 5	G $\flat$ 6	slow vibrato
4	A $\flat$ 4, C $\flat$ 5	E $\flat$ 6	—
5	G $\flat$ 4	C $\flat$ 6	fast vibrato
6	F $\sharp$ 4	D $\sharp$ 4, B $\flat$ 5	—
7	E $\flat$ 4	A $\flat$ 5	medium vibrato
8	B $\flat$ 4	D $\flat$ 5	slow vibrato

*Attack transients and higher partials do tend to be softer, and attenuate rather more quickly, than the lower, main pitches. Note too that instrument number 6 has a metallic 'chatter' with several high partials – due to some sort of manufacturing flaw – whenever it is struck hard.*

##### 6 Korean Stainless-Steel Mixing-Bowls: Steels \*

*If such lovely metal sound-sources are unobtainable, then appropriately tuned gongs, Japanese temple bells (rin), or some other metallic found-objects with suitably lengthy decay-times will certainly make satisfactory substitutes. Their intonations and other acoustical characteristics are:*

<i>Instrument</i>	<i>Main Pitch</i>	<i>Hum Tone</i>	<i>Other Partial</i> s	<i>Modulation</i>
1	A $\flat$ 4	E $\flat$ 3	G $\flat$ 5	—
2	F $\sharp$ 4	B $\sharp$ 2	D $\flat$ 5	slow vibrato
3	B $\flat$ 3	E $\sharp$ 2	A $\flat$ 4	medium vibrato
4	B $\flat$ 3	E $\flat$ 2	A $\flat$ 4	slow vibrato
5	D $\sharp$ 3	G $\sharp$ 1	C $\sharp$ 4 (nasal)	medium vibrato
6	A $\flat$ 2	D $\flat$ 1	G $\sharp$ 2, (D $\sharp$ 4)	medium vib., nasal

\* Whenever the clay (or glass) ‘bells’ or the stainless-steel mixing-bowls are struck forcibly, there is a real danger that they may be toppled over. Such a catastrophe can be prevented simply by attaching lozenges of “Blutac”, “Bostik”, “Plasticine”, or some other malleable gummy substance to the base of each instrument – thereby physically attaching it to the floor. However, instrumental resonances absolutely must not be interfered with!

### 1 Large Tam-Tam: T-T

A large, resonant tam-tam (at least 1300 mm in diameter, if possible) – very deep, profound and mysterious! Strike the tam-tam in its usual, slightly off-centre beating-spot.

### 3 Windchimes: Wch †

#### 1 Brass-Tube Windchime: BrTW

This metallic windchime consists of ten or so small thick brass tubes (outer diameter ca.6 mm, maximum length ca.120 mm), sounding within the range C $\sharp$ 6 — C $\sharp$ 7: brilliant, starry, cutting, very high-pitched; with a ca.10–15" decay. If necessary, randomly-chosen rods from a Mark Tree may be hung in a circle as a substitute for this windchime.

#### 1 Shell-Disc Windchime: ShW

This ‘crustaceous’ windchime consists of many large discs made of shell, suspended vertically in several lines. It should possess a ‘hard’ moderately loud clattery sound – medium- to high-pitched; ca.5" decay.

#### 1 Ceramic-Disc Windchime: CW

This earthenware windchime consists of six to ten large glazed ceramic discs, which may be irregularly shaped. It should possess a rich and resonant sound – ‘loud’, mellow, relatively low-pitched; ca.15-20" decay.

† Agitate the elements of these windchimes directly, with hand(s) or mallet(s), roughly in accord with the notated waveform contours.

## 4. STAGE SET-UP, BACKGROUND LIGHTING AND IMAGE-PROJECTION – IN CONCERT

Through performative experience, I do believe that the most practical set-up for playing **Arcturus Timespace** requires the soloist to *kneel on the stage-floor or on a dais* (with their knees resting upon a cushion or pillow, for comfort) surrounded by the percussion instruments, which themselves repose upon the same flat surface; a diagram and a photograph depicting this work’s instrumental array are appended to these Performance Notes. Furthermore, it is critical, too, that the gestural/theatrical aspect inherent within my instrumental set-up and the public presentation of **Arcturus Timespace** must *enhance* its music, not impede or contradict it. All physical gestures and actions carried out by the soloist must be seen to be deliberate, fluid, and totally controlled: this sort of ‘effortless theatricality’ is crucial, for instance, in the transition passage where the mandolin is placed upon the ground then struck with tuning forks (bars 109–112). Furthermore, the soloist should always pick up mallets as discreetly and unobtrusively as possible.

### LIGHT- AND IMAGE-PROJECTION: DETAILS

**Arcturus Timespace** was conceived such that it ought to be a successful artistic opus whenever it is presented in a regular concert-hall venue as a *purely acoustical composition*: thus, my proposed light- and image-projections are both *optional* ‘extras’. If, however, such projections are to be used in concert, then I would encourage an imaginative approach to set-design: semi-transparent ‘sculptures’, such as white tent-flies, might act as backdrops (behind the soloist’s instruments) against which the images will be projected – so that they could instead function more as complex, somewhat ambiguous light-projections rather than as clear, distinct images. In any case, background lighting and the images themselves must, at the very least, encompass an area including the soloist and their instruments. *Light-projection* (i.e. background lighting), if employed at all, calls for just two colours – a deep blue, and an intense red – which are able to be cross-faded and dimmed to blackness: from bar 48, the deep blue lighting ever so gradually changes to red as the piece nears its climax (around bar 92), returning once again to deep blue (at bar 113) before fading into total darkness (during bar 135). The ‘preliminaries’, before the work proper starts, do, however, require careful treatment:

After the auditorium’s house-lights have all been dimmed to complete darkness prior to the very beginning of **Arcturus Timespace**, the soloist moves quickly, silently, and furtively into playing position – their shoes having already been removed (as if one were entering some sacred space!). Once the soloist is settled in place, remaining perfectly still, the deep blue background lighting and the first astral image are then slowly faded-in (approximately together). A few seconds after the background lighting and initial projected image have achieved their full brightness, the soloist – as instructed by the score on p.1 – then picks up their mandolin and begins to play...



As my Programme Annotation to **Arcturus Timespace** attests, its *projected images* “consist of diverse stars, star systems, nebulae, galaxies, luminous gas-clouds and -sheets...”. The sixteen slides used during **Arcturus Timespace**’s première performance have all been digitally archived – their source-photographs were scanned at high resolution (506 dpi) and then saved as JPEG or TIFF files, at most 9 MB in size – and I am happy to e-mail them as required. However, even though I do also provide below quite detailed descriptions (as well as full colour prints) of these particular ‘space images’, it is by no means imperative that they be obtained: rather, one may substitute some other astronomical shots if desired – so long as they each possess *colours and forms* that are quite similar to the corresponding original pictures. The following Internet websites, recommended by Steve Clark as a first port-of-call, are both fertile sources for downloading apropos celestial images:

1. <http://www.eso.org/outreach/gallery/astro/>
2. <http://opposite.stsci.edu/pubinfo/pictures.html>

Although the original technology used for image-projection at **Arcturus Timespace**’s première (in 1987) comprised two powerful slide-projectors possessing ‘dissolve’ capabilities, I envisage that nowadays, some sort of computer projection-system would be employed instead. Whatever apparatus one eventually utilizes, it should be deployed a fair distance away from the performance zone itself, and must therefore possess sufficient candlepower to project every image effulgently. Note that in my score of **Arcturus Timespace**, large circled numbers depict the unalloyed manifestation of each heavenly image; these circled numbers have all been positioned therein quite specifically, so that image-projection should always be quite accurately synchronized with the electroacoustic fixed-media part. The constituents of each of the sixteen colour slides which were projected during the première performance of **Arcturus Timespace** are as follows (in order):



- 1 An image of the Orion nebula, a gas-cloud in the constellation Orion: a dense pink-red cloud, below which is a brilliant white star surrounded by an eye-catching blue-purple corona; the background field contains quite a few stars. In summary, two contrasting shapes – blue versus red...

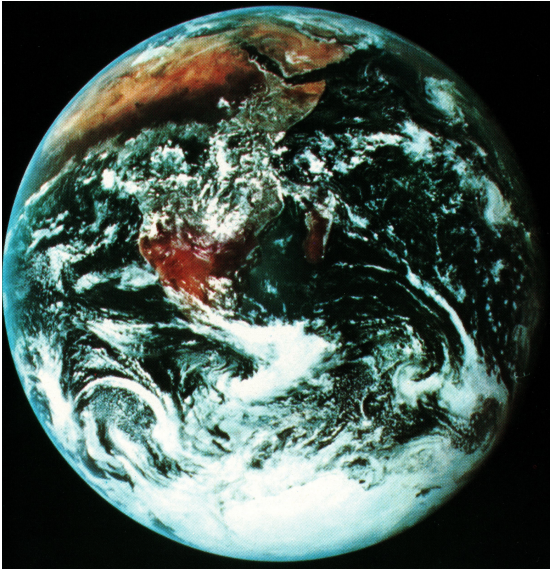


- 2 An image of the ‘radio galaxy’ Centaurus A, a giant yellow-brown elliptical galaxy crossed by a dark, complex lane of interstellar dust; the background field is dark-blue/purple and contains myriad stars.

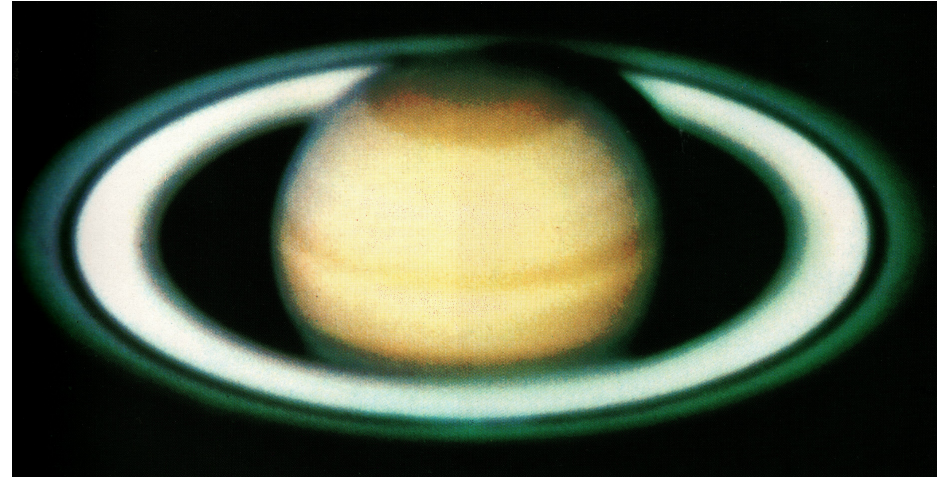


- 3 An image of the Veil nebula (the remnants of an old supernova): filigree red wisps of gently glowing gas loop across thousands of background stars from the Milky Way, in the constellation Cygnus.





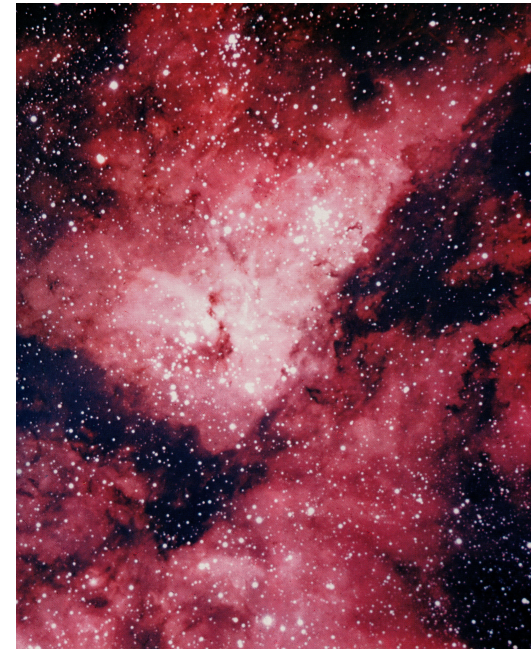
- 4 An image of our Earth, photographed by Apollo astronauts between the Earth and Moon; the globe fills this shot. Outlines of Africa and Arabia are easily recognized, but cirrus clouds decrease the visibility of the Sahara region. Clouds rim many coastlines, while hurricanes rage in the southern oceans; the south polar-cap is also cloud-covered.



- 6 An image of the planet Saturn and its rings, viewed at an angle of approximately  $45^\circ$  (and seemingly out-of-focus slightly): the rings are green, very dark blue, and white; the planet itself is primarily yellow.



- 5 An image of the Lagoon nebula (also known as M8): a glowing red cloud of gas in the constellation Sagittarius, bisected by a dark lane of interstellar dust; the nebula itself possesses a brilliant white core, all against a blue-green field containing numerous stars.



- 7 An image of the Eta Carinae nebula, a stunningly beautiful and complex cloud of luminous gas in the southern Milky Way: a large smoky-red region (with brilliant white and dark patches), shot through by myriad stars against a dark background.

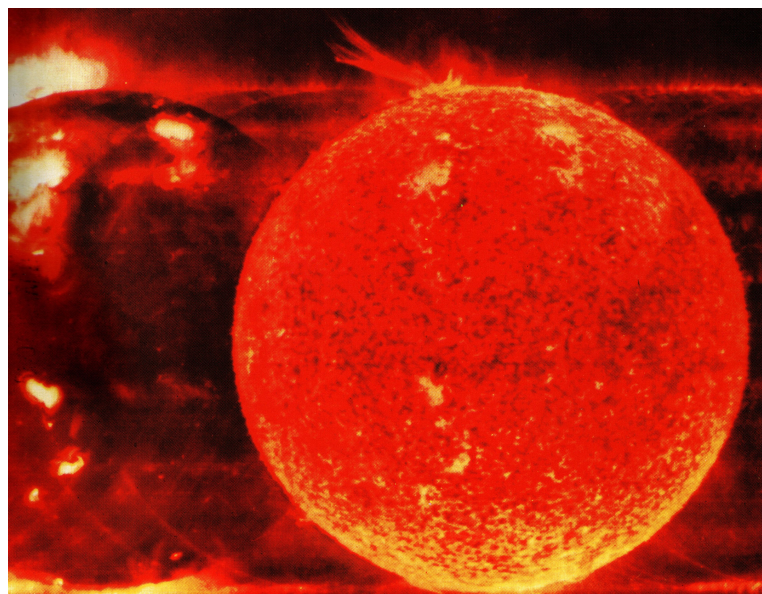




- 8 An image of the spiral galaxy Messier 83, in the constellation Hydra: it is yellow-brown, with multihued stars, set against a dark-green field containing relatively few bright objects.



- 9 An image of the Coalsack, a dark cloud of dust in the constellation Crux: it is a dark 'hole' in the middle of a dense field of stars within the Milky Way.

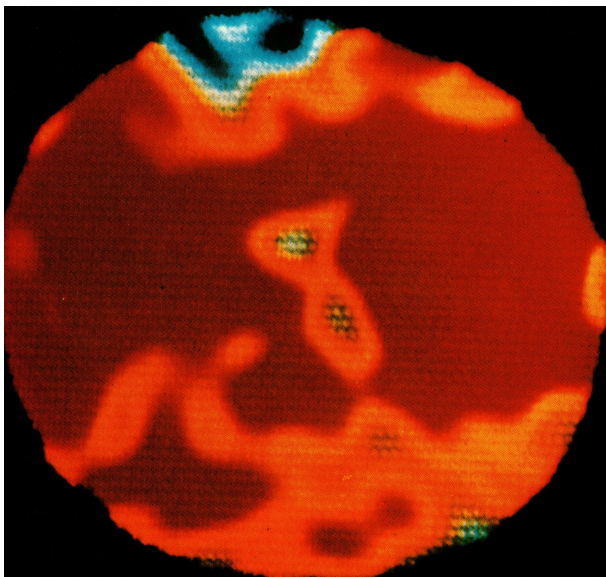


- 10 Several striking superimposed images – multiple exposures? – of the Sun: very fiery and powerful orbs ... reds, yellows and oranges, with some darker regions.



- 11 An image of the open star-cluster NGC 3324, a dense agglomeration of stars: its biggest star is a red supergiant; the others are all blue-white orbs set against a darker blue-green background containing many stars.





- 12 An image of the red-giant star Betelgeuse (the brightest star in the constellation Orion), as resolved by the technique known as speckle interferometry: this is a computer-synthesized shot, consisting mainly of reds and oranges, with a few blue zones – representing cooler spots upon the star's surface.



- 13 An image of the Dumbbell nebula in the constellation Vulpecula: it is a blue, purple, and dark-red round, yet transparently luminous, gas-cloud set against a brilliant starry field.



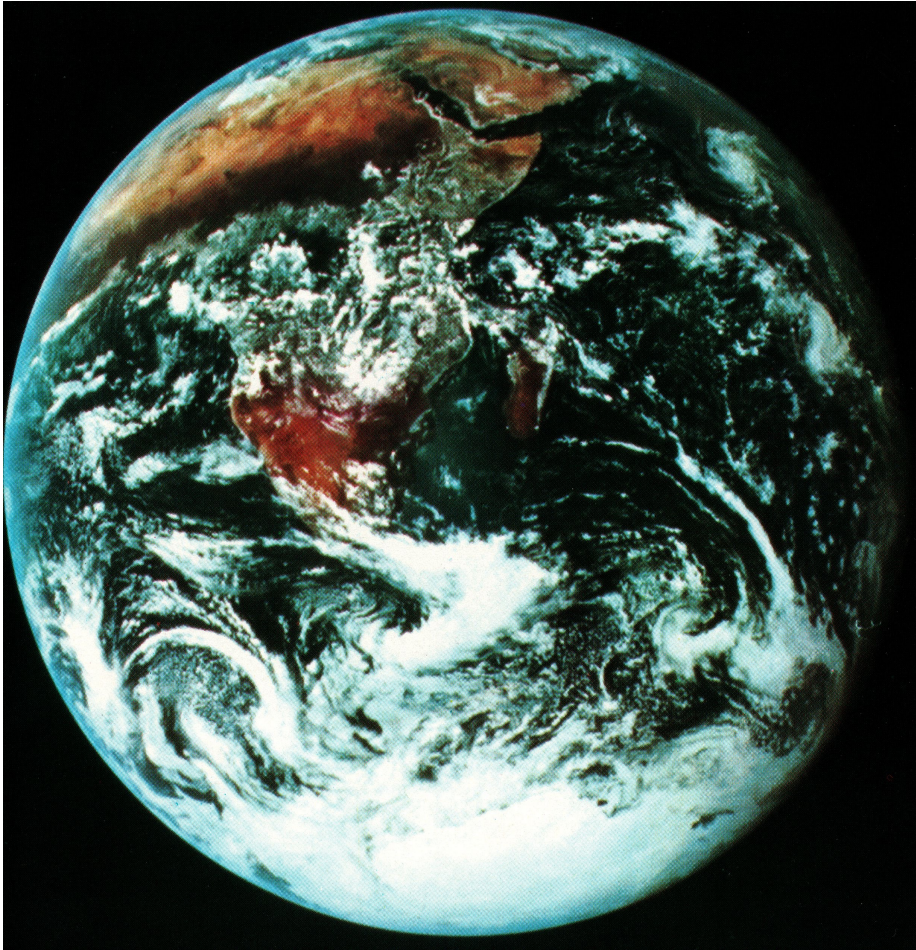
- 14 An image of the Ring nebula in the constellation Lyra, at the centre of which is a white dwarf star: this nebula comprises a large red annulus-like ring (around a green central region), at the core of which is a small but visible blue-white star; the background is very dark.



- 15 A fantastic image of the Pleiades (also known as the Seven Sisters) in the constellation Taurus: this magnificent shot parades at least seven coruscative white stars, each surrounded by fuzzy bright-blue/purple wisps – all set against a dark, yet star-filled, background.



# Percussion Map



16 = image 4 again: An image of our Earth, photographed by Apollo astronauts between the Earth and Moon; the globe fills this shot. Outlines of Africa and Arabia are easily recognized, but cirrus clouds decrease the visibility of the Sahara region. Clouds rim many coastlines, while hurricanes rage in the southern oceans; the south polar-cap is also cloud-covered.

© Ian Shanahan, Sydney, Australia; 12 June 2001.

Lighting

Images

'Tape'

Mandolin

Clay Bells

Steel Bowls

Windchimes

tam-tam

CW ShW BrTW

8 7 6 5 4 3 2 1

6 5 4 3 2 1

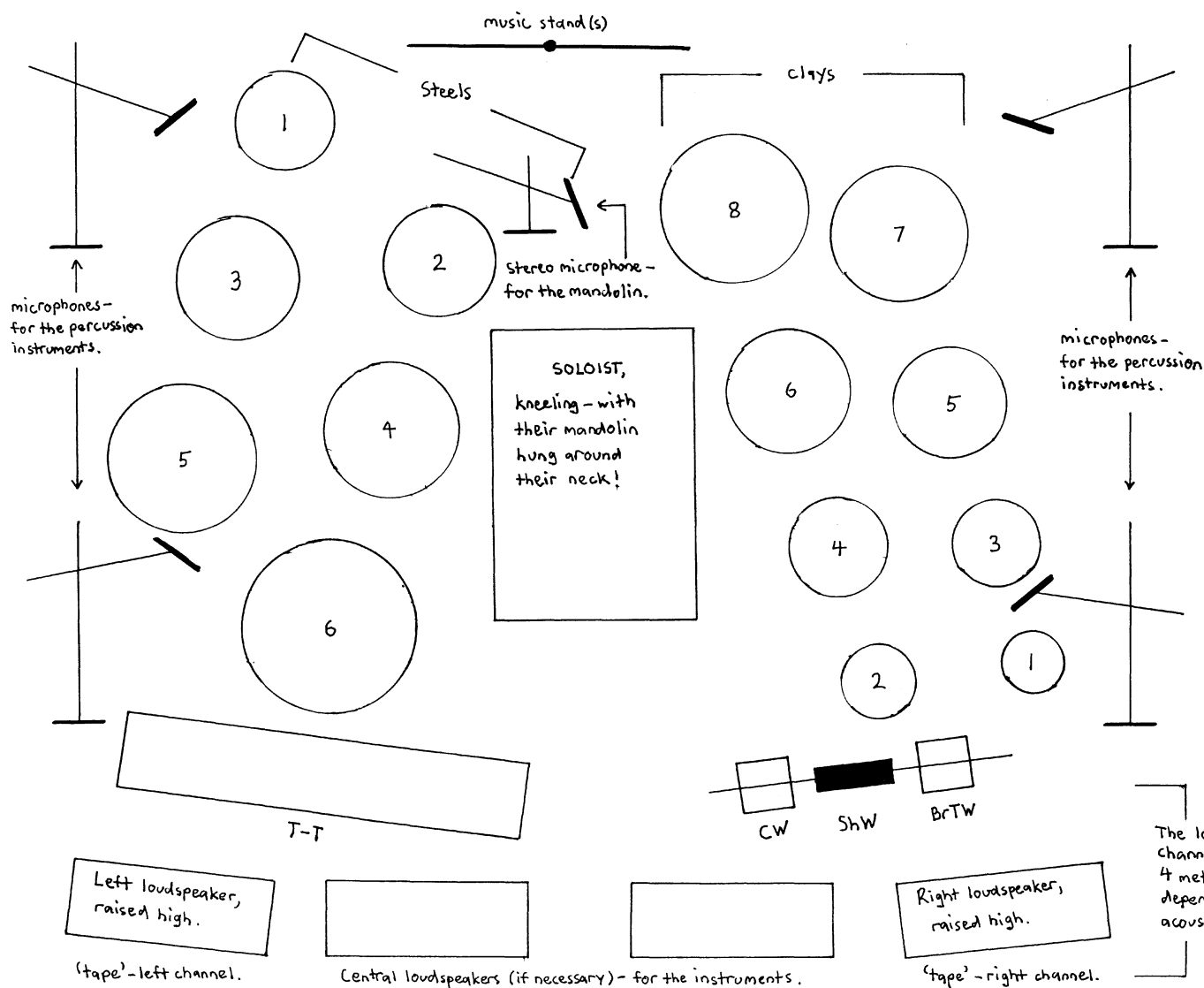
PHYSICAL LAYOUT OF THE INSTRUMENTS - NOT TO SCALE

AUDIENCE

Arcturus Timespace

© Ian Shanahan,  
Sydney, Australia, 1994

• To Ian Fredericks;  
For Stephen Morey  
to play...



The loudspeakers for the two 'tape' channels should be situated about 4 metres behind the instruments, depending on the auditorium's acoustics.



# *Arcturus Timespace*

After the auditorium's house-lights have all been dimmed to complete darkness prior to the very beginning of **Arcturus Timespace**, the soloist moves quickly, silently, and furtively into playing position – their shoes having already been removed (as if one were entering some sacred space!).

Once the soloist is settled in place, remaining perfectly still, the deep blue background lighting and the first astral image are then slowly faded-in (approximately together).

A few seconds after the background lighting and initial projected image have achieved their full brightness, the soloist – as instructed by the score on p.1 – then picks up their mandolin and begins to play...

# Arcturus Timespace

Ian Shanahan (1987/1994)

**A**

Lighting: Fade from black to deep blue background lighting before the music begins.

Images: ① Projected before the music begins.

**Mandolin:** Extremely slow, infinitely calm and ritualistic, with a sense of suspended time - but rhythmically precise.  $\text{♩} = c.35$ . Very gently. *pp* pochiss. *p poss.* *p*. In a ritualistic manner, slowly take up the mandolin and put it into playing position. *pp* *p poss.* *p*. Quietly - but fairly quickly and fluidly - pick up the mallets with the right hand while the mandolin continues to sustain the E. *pp* *p poss.*

**Clay Bells:** *mp* *p* *mf*

**Steel Bowls:** *p* *mp* *p*

**B**

Images: ②

10 Slow cross-fade to ...

**'Tape':**  $\text{♩} = c.40$ . *p* *ppp*

**Mand.:** *p* *ppp* *mp* *p poss.* *mp* *p* *pp* *mf* *pp*

**Clays:** *ppp* *ppp* *mp* *p poss.* *mp* *p* *pp* *mf* *pp*

**Steels:** *p < mf mp* *mp* *mp* *mf* *pp*

**Annotations:** M (A) plectrum, echo, irregular attacks, freely, Cue sound-projectionist







**C**

Lighting [Commence a very slow change to red background lighting ...]

Images (4) Immediately begin a slow cross-fade to ...

Gradually increase the tempo to ♩ = c.80, as indicated — ♩ = c.42. — — — — — ♩ = c.43. — — — — — ♩ = c.44.

'Tape'

Mand.

Clays.

Steels

*tr* irregular attacks

Extend the duration, if desired

*mf* *p* *p poss.*

plectrum

M

M very quickly

**D**

Images (50) (55)

— ♩ = c.47. — — — — — ♩ = c.49. — — — — — ♩ = c.50. — — — — — ♩ = c.52.

'Tape'

Mand.

Clays.

Steels

*pp* *mf* *p poss.* *f* *f poss.*

A — — — — — M

gradually slow down the tremolo

non-trem.

clean, clear



75

Images

Tape'

Mand.

Clays.

Steels

Cross-fade to ...

80

Extend the duration, if desired.

freely

mp

f

mf

p

mp

f

p

mf

tr

85

Images

Tape'

Mand.

Clays.

Steels

Cross-fade to ...

9

Quickly cross-fade to ...

irregular attacks between the strings, gradually slowing down the tremolo

plectrum

damp

precise

thumb + forefinger

finger

soft

5

ff

mp

p poss.

p

mf

f poss.

fff



110

F

115

Lighting

Deep blue background lighting

Images

13

'Tape'

descending quartertones

Mand.

Slowly place the mandolin onto the floor in front of you, in a ritualistic manner.

*mf*

Pick up the tuning forks and strike the strings hard behind the bridge of the mandolin with the tuning forks' tines, then quickly place their butts upon the bridge itself. *f poss.*

Clays.

Steels

final note of previous staggered chord, from which 'tape' textures arise. (The above graphic represents only the character and not the detail of the 'tape' sounds.)

recurring lower sound on 'tape'.

Remain very still prior to playing the repeated phrase, having picked up the mallets.

15

Images

Begin a slow cross-fade to image 14 just after the start of the soloist's repeated phrase ...

Begin a slow cross-fade to image 15 after the SECOND time ...

Begin a slow cross-fade to image 15 after the THIRD time ...

'tape' commences fade-out after the SECOND time...

'Tape'

Some temporal freedom is permissible from here onwards, but not so much as to lose the feeling of constancy: gently rocking.

Mand.

etc ...

finger

(A)

*mp*

Clays.

*mf*

Steels

*p*

Wch

*mp*

BrTW

ShW

CW

*mp*

*p*

*mf*

128

Lighting

Images

'Tape'

Mand.

Clays.

Steels

130

G

Commence fading the lighting to black (sometime after the letter H) ...

['tape' fades out after approximately the third time]

Decrease the tempo further, as you wish ...

finger

finger

*mp*

*mp*

*pp*

*pp*

Gradually decrease the overall dynamic level to '*ppp*'.

*mf*

*p*

*p*

*mf*

*p*

*p*

*p*

*ppp*

*ppp*

*p*

*ppp*

*ppp*

*p*

*ppp*

Repeat the phrase until the 'tape' fades out altogether, completing the phrase during which the 'tape' sounds actually disappear. If the 'tape' fade-out occurs near the end of a phrase, then play it once again more slowly before continuing on.

Images

Mand.

Clays.

Steels

135

H

Cue image-projectionist

Rapid cross-fade to ...

16

Begin to fade image 16 to black ...

finger

*ppp*

*pp*

*pp*

*ppp*

*ppp*

*ppp*

*p*

*p poss.*

c.30"

Maintain your final physical attitude - absolutely still! - whilst all sounds resonate to silence and all lighting and image-projections fade to complete darkness. (Then slowly illuminate performance space.)

FINE.

9.50 pm, 21/4/1987,  
Sandringham, Victoria, Australia.  
(Minor revisions, Sydney, 1994.)